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Privacy in Suburban Life.

IN an article on "Suburban Homes" in *The Cosmopolitan* for June, Mr. R. Clipston Sturgis says that more individuality, more separateness, more seclusion should be achieved in the arrangement and planting of the grounds about suburban houses of the better class than is usually achieved or even desired in America to-day. This sentiment is not only in the interests of beauty as such, but still more in the interests of humanity. The article goes on to say that the lives led by the owners of such houses should be more individual, more private, more truly domestic and more closely in touch with nature, and that this cannot be accomplished unless the character of their environments is changed.

This is sound doctrine, and Mr. Sturgis preaches it with an attractive enthusiasm which, however, is not altogether wise in the special line it takes. The text is the English suburban garden as permitting and determining English habits of suburban life. But the local obstacles are not noted which stand in the way of a widespread acceptance in America of the gospel of privacy and seclusion upon this particular Anglican basis. And, therefore, many readers may fail to be convinced of the truth of the gospel itself. Our wish just now is to show the soundness of the general statements before we try to point out the errors made in their application.

Speaking first of English suburban houses themselves, Mr. Sturgis says that, whether old or new, owned by the rich man or the artisan, they have "an air of comfort and quiet dignity, they look substantial, respectable, self-contained, inviting; in a word, they are homelike." Our own, on the contrary, are usually "frame houses, looking unsubstantial and temporary. They convey no suggestion of dignity and retirement. They do, indeed, look hospitable and open, and have an air of saying, 'All mine is yours; pray, enjoy it!' They even invite you to look in on their grounds and through their open windows, where the English house says, 'Don't come in unless you know us.' But notwithstanding all this, I think on account of all this they are not so pleasant to look upon nor so sweet to live in."

There is truth in these words, and a great part of the difference they mark might profitably be done away with. As long as economy—which, most often, means necessity—bids the American build with wood, it will be more difficult to give a look of permanence and stability to his house than to the Englishman's; and upon this look, of course, must largely depend its air of dignity. But it is by no means impossible to achieve stability and dignity of effect even with wood. The main trouble is not with our material, but with the way in which we use it, preferring showiness to quietness, variety to harmony, over-elaboration to simplicity, loudness to modesty, evident costliness to a well-bred reticence.

But the outer aspect of a house, while it may reveal the owner's character and thus give an insight into his probable habits of life, does not actually mould and determine these habits. They are more directly moulded and determined by the disposition of the interior of his house. It is impossible to lead a comfortable, sensible, profitably occupied, quietly amused, genuinely domestic life in a house that has been planned and furnished "for show." Many American houses seem to have been built rather as places which may be proudly exhibited to visitors, or in which troops of guests may be sumptuously entertained, than as places in which the occupants, each in his or her individual way, will find the needs and desires of personal existence agreeably and adequately met. They are as well fitted for occupation by one family as by another, and they are not really well fitted for occupation by any family which finds its best pleasures in hours of privacy and domesticity.

We do not say that the majority of American suburban homes are of this kind. Even their exterior aspect is often more satisfactory than that of similar houses in other lands, as English architects have been the readiest to proclaim. And many appear unsatisfactory on the outside (owing, perhaps, to the architect's, rather than the owner's, lack of good sense), which, when one enters them, present a very different face. Probably we exaggerate the relative number of those which are really undomestic within as well as without, because the house built "for show" is the one most often exhibited. But against the environment of our suburban houses a much stronger indictment can be brought than against the houses themselves.

The character of the life that is led in a suburban house is determined, at least for seven or eight months in the year, very largely indeed by the character of its grounds. If the grounds are not beautiful, the sense of beauty will be dulled and distorted in those who perpetually gaze upon them. If they are planned for display, as ministers to pride and vanity, the general mental attitude of the family will be unfavorably affected. If they are not well adapted to outdoor repose or activity, and to the development of a personal interest in nature and her products, they will not be lived in; the days of the family will be passed indoors or passed away from home; and the true enjoyments, like the true refining, softening and cultivating influences of rural or semi-rural life, will be altogether missed. And if the grounds are adapted to outdoor living they must have a good measure of privacy—of seclusion. The English suburban place, says Mr. Sturgis, "gives the householder quiet, rest and retirement." These are the results of separateness, protection, privacy; and it is their possession which fosters, not only the typical English love of nature, but the typical English form of domestic life—reserved, intimate and thoroughly domestic, yet hospitable in the best sense of the word, because the truest hospitality is that which admits the outsider into the most homelike home.

Quite different from this is the current American ideal of beauty, comfort and convenience as expressed in the surroundings of suburban homes. In colonial days we approached more nearly to the English ideal, as is shown by such streets as still exist in towns like Salem and Annapolis. As a rule, the English house is set back from the road, while the American colonial house is set upon it, or very near to it. But privacy for the grounds is in both cases achieved. Here they lie behind the house,

overlooked by the windows of its chief apartments; in England they are protected from the street by high walls or hedges. After colonial days we more frequently set our houses back from the street without giving them the full protection of the high English enclosure. But until within recent years they were separated, and, in general effect, at least, to some degree secluded, by walls or hedges or palings of moderate height and by screening plantations. Each still had individuality; each looked like a home, even though it gave evidence that its owners loved entire seclusion less than their English cousins. Within recent years, however, there has been a widespread desire to abolish the last semblance of separateness—of privacy. In countless old towns and villages the barriers have been destroyed, and each man's garden merges in his neighbor's, while all merge indistinguishably in the grassy border of the street. On many new streets the most admired type of place seems to be one where there is an abundance of well-kept grass and a great overabundance of graveled drives and walks; where there are no large trees nor luxuriant shrubberies, but a casual sprinkling of small supposedly "ornamental" trees and isolated shrubs; no masses of freely flowering plants, but many gaudy beds of clipped foliage-plants or formally arranged flowers, dropped, like chromos on a green wall, upon the bright emerald expanse of the lawns. Here, indeed, is no privacy, no seclusion, no possibility of outdoor repose, or of outdoor activity, except in the form of a game of tennis played under the eyes of the whole town; and, of course, there is no more beauty than there is comfort or convenience. It is idle to think that people who live, or children who are brought up, in a place like this, will learn to love the country, or will be civilized and sweetened by the influences of nature. They are actually worse off than the dweller in cities; for he may at least know what natural beauty really is and appreciate it when he has the chance to see it, while they confuse natural beauty with the barren ugliness they have themselves produced, and can have no eyes or heart for its charm when it really lies before them.

Truly, Mr. Sturgis's appeal for more privacy, more seclusion, more individuality in our suburban homes needed to be made. The explanation of the belief that he has not made it along just the right lines must be postponed to another day.

The Redwood Flora in April.

DURING the month of April I left my home in the interior valleys and rode to the Mendocino sea coast. The air was sharp and the high mountains in the north-east were covered with snow, but the valleys and hillsides about them were in the full springtide of bloom, and flowers were everywhere. Ten miles of mountain climbing, and the summit of the range which separates the valleys from the coast region is reached at an elevation of 2,300 feet. The elevation seemed to make little perceptible difference in grass or flowers, although the woods showed the influence of the sea breezes in greater vigor. A mile to the westward the beginning of the great Redwood forest could be seen, and north, south and west, as far as the eye could reach, stretched the noblest forest in the world. Half of all the Redwood forest was in view, and from the Russian River, south of here fifty miles, to Alaska, stretches an almost unbroken wood. A few miles down a tortuous grade and the forest's vanguard is met. The first Redwoods were fine specimens, five to seven feet through and hundreds high. This was at Orr's Springs, and a small grove on the mountain side contains some of the largest trees in Mendocino County's forests.

In the cold and deeply shaded cañon, vegetation was backward, and our pretty Wake Robin, Trillium ovatum, so like the T. grandiflorum of the eastern woods, was nearly gone. A few still retained the deep purple petals to which their pure white flowers change with age. Trillium sessile, var. Californicum, was in blossom in the small openings along the stream. In our part of California they are at first white with a purple centre, and later take a purple tinge; about San Francisco Bay, and in the southern Sierras they are a red purple, while a flower reached me this season from the Big Tree region of the Sierras which was of that velvety black purple one sees in some Arums. In February, when I was last in the Redwood region, Cardamine pausisecta was in bloom, a very attractive little plant with the lower cordate leaves purple beneath and mottled in white and purple above. The flowers are rather attractive, white, with the purplish caste so common in these woods. In April it was still in bloom in cold spots.

For miles down the cool cañon, in groups of a few, or occasional beds of hundreds, Erythronium giganteum was conspicuously beautiful. This is the Dog-tooth Violet of the Californian Coast Ranges and beloved of all children. As E. grandiflorum it is the best known of the many Pacific coast Erythroniums in the garden. The straw-colored flowers with orange centres recurve to the stem. In these woods they grow very large, and I have seen them frequently with eight to sixteen on a stem, and three to four inches across. In April they are in full bloom and worth a pilgrimage to see. The leaves are as large as a man's hand and mottled in mahogany.

On down through the dense woods, past openings cleared by the loggers of the big coast sawmills, and through small openings, on which, for some unexplainable reason, the forest never grew, but which support a luxuriant growth of grass, the road passes. In places rock masses were to be seen clothed with Ferns, Polypodiums and Adiantums, the latter just throwing up their young fronds.

A glimmer of pink in the deep woods between two Redwoods shows where a colony of that dainty Orchid, Calypso borealis, has established itself in the mold. It is a rarity in these woods, and the flowers duly prized. Miles below, the road leaves the cañon, and by a grade along the mountain side ascends to the ridge which divides two of the principal streams of the Redwood belt. The grade is on the north side of the cañon through dense woods, and the flowers are correspondingly backward. Where it crosses a small stream the Sword Fern, Aspidium munitum, var. rigidum, grows in great beauty, and the new fronds are well developed. This Fern, rare in the interior, grows in great numbers in all of the cañons and shaded woods of the immediate coast region. On a shaded bank by the roadside the Wood Anemone, A. nemorosa, was in full bloom. In February it was blooming in warm places.

On the south side of the ridge the flowers were farther along. In a little opening I saw many Zygadenus paniculatus in flower. The branching stems were two feet high, and the greenish white bloom not unprepossessing. Along the road I noticed the pink Lathyrus venosus, our Wild Pea; handsome plants of Cynoglossum grande, with purple, white-centred flowers, and the first flowers of Ceanothus thrysiflorus, a handsome shrub, which on the coast takes possession of the cleared woods and attains the size of a small tree; Blue Blossoms it is called here, and it deserves a high rank for beauty. When the long slopes are wavy masses of its blue flowers it is a lovely sight.

In the timber the Blueberries grow tall, five to seven feet. At this time they are beginning to blossom, but the pink flowers are not as showy as the dark red new growth which was starting. Most of the greens of the Redwood are dark and sombre at maturity, but the new shoots a light green, and with the fresh plumes of the brake, now just unfolding, the feathery shoots of the Douglas Spruce and the foliage of the Sweetbrier the woods are lighter than at any other season. At a wayside ranch, as the little clearing on the steep hillside is called, the Apples are in flower. The road again returned to a river-side, and for miles was through a forest which was cut about twenty years ago.

The thickets of sprouts encircling the stumps are already from forty to fifty feet high, and dense masses of Douglas Spruce and Fir (Abies grandis), seedlings since the woods were cut, are nearly as tall. No one seeing the second growth in the Redwood forest needs to be told that only intelligent forestry is needed to make them furnish a vast and inexhaustible supply of timber. A very large proportion of the large trees now standing are sprouts from an older growth, as is attested by the grouping, the one-sided trunks and the hollows between the individuals of the groups showing where the old trunk burned or rotted out. The stream was used by the loggers for years in getting their logs from the forest to the mill at the seaside, and their channels are cut deep and their beds smoothed by the irresistible force of the great logs driven by a strong flood current. Mosses and Ferns clothe the bed and bottom, and overhanging the sides the deciduous Rhododendron occidentale grows in plenty. From the floor of a side cañon, into which the road now turns, great trees, the finest yet encountered, tower to a height of three hundred feet. The woods are dark and cold, the ground covered with the creeping Salal, Gaultheria Shallon. By the side of the sluggish stream the Lady Fern grows and Trillium ovatum is still fresh in the deep shade. In a little bog in a clearing the handsome Scarlet Currant, Ribes sanguineum, is in full glow, and at a distance of twelve miles from the ocean Rhododendron Californicum, our large-leaved evergreen Rose Bay, is first seen. Other miles of noble woods are passed through, alternating with clearings, where the lumber was cut for ties, and neat homes now take the forest's place, or the trees have just been felled, and the tie-maker having cleared the débris by fire is now hewing out the trees, and the tender young growth is springing from the charred groups. In the woods the evergreen Barberry, Berberis Aquifolium, is in masses, now bearing racemes of yellow flowers, and the Wood Sorrel, with its pink-purple flowers, carpets every surface not already occupied. The cold banks above the roadside are crowded with Ferns, among which the Maiden-hair, Adiantum pedatum, appears, and burned woods are yellow with a Wood Violet, Viola sarmentosa.

The barren is always the same, except when lighted up by the Rhododendrons, the first of which were just blooming in the tangle of Scrub Pine, Cypress and bushes. A few miles of this dreary, but interesting, waste and the last seaward slope is descended through a half-cut forest, a perfect tangle of great, almost naked trunks, their limbs swept off in the fall of the Redwoods, but still vigorous, standing in among myriads of tall young trees of Pinus muricata, Abies grandis, the lovely Weeping Hemlock, Tsuga Mertensiana, and young Redwoods, the logs and brush overgrown by Blueberries, Salal, Salmon-berries and Rubus Nutkanus, all bursting into new leaf, with great glowing pink clumps of Rhododendron, here in the fullness of their exquisite flowering.

A vista of the sea, of a rock-bound coast and dashing surf, of green slopes covered with grain, and Mendocino is reached, with houses embowered in Fuchsias, and hedges of Callas in blossom and Marguerites everywhere, while Foxgloves run riot down the gutters.

Ukiah, Calif. *Carl Purdy.*

Forms of some European Conifers.—II.

I HAVE already spoken of certain forms of the European Spruce which are not varieties in the botanical sense, but modifications of development. There is, however, on the Alps a single botanical variety of much interest, because it shows the close relationship of our European Spruce with other species of the genus. It is the form medioxima of Nylander. This tree grows in more or less isolated groups on the central ranges; in the Haut Valais, in Engadine, and also, although less commonly, on lower mountain ranges, and may be distinguished by two characters from the ordinary Spruce-tree. From this it differs, first, by its shorter, much thicker and more rigid leaves, which are more obtuse and marked by four white stomatiferous bands which give to this tree a certain resemblance to the Fir, Abies pectinata. Secondly, the fruit is shorter, with more delicate scales, flat and rounded at the apex, the cone being only about half the size of the cone of the ordinary type, with only about two-thirds as many scales. These scales are flexible, with entire margins, the whole cone resembling in a singular manner the cones of the Black Spruce of America. There is a tree of similar form in Finland and Sweden, while the Picea obovata of Siberia is only a more accentuated variety with cones which are similar, although still smaller. Picea obovata is closely allied to the American species, and our alpine variety medioxima is the representative of a series of species of the extreme north, which has been preserved on the mountains of Europe since the glacial epoch.

I will now consider the forms of the Fir, Abies pectinata, found on our mountains. It is a tree very uniform in habit, showing fewer modifications from the normal type of growth than the Spruce. Nevertheless, it is possible to distinguish the form alpestris, which, although not common, is found occasionally at elevations of three to four thousand feet above the sea-level. It is a rather feeble tree with short and rather erect branches, so that the white surfaces of the leaves are presented to the eye, giving the tree a strange appearance. Mention must also be made of the form candelabra, which may be seen scattered here and there through the Jura and on the Alps, although always isolated in alpine pastures. It is a splendid tree, often of enormous dimensions, with elongated horizontal lower branches which become very stout and develop lateral shoots which grow straight up and have the appearance of young perfectly developed Fir-trees, with the appearance of little trees grafted on the old branches. These great Fir-trees present a most curious aspect, resembling candelabras of eight or ten or more branches. Apparently our Fir is liable to grow into this form anywhere within the area of its distribution when it is not crowded by other trees. Unger & Kotschy figured it in their work on the Island of Cyprus, and it does not appear to be rare in Greece. Of purely botanical varieties of the Fir, a form with pointed leaves is common in south-eastern Europe. Trees with this peculiarity of foliage have been described as Abies Apollinis and A. Reginæ-Amaliæ. They can only be distinguished from the tree of central Europe by their pointed leaves. These on the ordinary form are confined to the upper and fruitful branches, although they sometimes occur on branches near the middle of the tree. On A. Cephalonica, of the island of Cephalonia, another form of the common Fir, the pointed leaves are the most numerous, appearing even on seedling plants.

It may, perhaps, be interesting to sketch the distribution of the Spruce and Fir in Europe, as the regions occupied by these two trees are so different. The Spruce is a tree of the north of Europe, being found in the south only at high elevations. The Fir, on the contrary, is a tree of the mountains of temperate Europe, unknown in the north, and descending southward over the mountain ranges of the Mediterranean basin. The Spruce covers the plains of Russia from the Ural Mountains, crosses Finland, Scandinavia, the Baltic Provinces, and enters Germany from Lithuania, but in the west it leaves the plains and covers the mountains of Germany to the Vosges, reappearing on the mountains of central France, and finally disappears in the Pyrenees without entering the Spanish peninsula. It covers the Alps, but does not enter Italy, and becoming rare on the mountain ranges of eastern Europe it does not show itself beyond Transylvania, where it is replaced by Picea orientalis, or extend to the Caucasus. The Fir, on the other hand, has its centre of distribution in the German mountains and in the Alps, growing on all the ranges from the Pyrenees to the Carpathians and on those of Greece and European Turkey. It does not descend into the plains or extend into the Caucasus, where it is replaced by Abies Nordmanniana. It extends, however, along the Apennines to Sicily; it is common in Greece at elevations

of from three thousand to four thousand five hundred feet; it does not, however, exist on the mountain ranges of Spain, where, in the south, it is replaced by Abies Pinsapo, a species with quadrangular leaves.

Bâle, Switzerland. *H. Christ.*

Pineapple-growing in Florida.

LOCATION.

UNLIKE the cultivation of Oranges, which is a general industry in Florida, Pineapple-growing is extremely local. While there is one general region whose main investment is in Pineapple-growing, there are several smaller districts which make this a prominent industry. The northernmost place where this industry is carried on to a considerable extent is Orlando. The surface of the country is level and only slightly raised above the water in the lakes. There is no eminence which can be dignified as a hill. The soil is generally sandy, with considerable vegetable matter intermixed, as a rule, and, as a whole, excellent for Orange groves, except that much of it needs draining. Well-drained and elevated places are the best for Pineapple-growing. Unbroken tracts fifteen or twenty acres in extent, with all the requisites naturally suitable for this crop, are not common. This section is far enough south to be protected from most of the heavy winter frosts, and but few light frosts occur. Such a heavy freeze as occurred in December, 1894, is fatal to Pineapple cultivation. Slight frosts are not unknown here as late as the 20th of March.

Avon Park is located about sixty miles south of Orlando, in a high, dry, flat woods country. Flat woods is the local name for the level Pine woods land. This district has a greater elevation than Orlando and is more exempt from slight frosts. As a whole, this section is rather drier than typical Orange land. This district has no railway communication, consequently the industry cannot be carried on very extensively.

Myers is located on the south banks of the Caloossahatchee River, and about 150 miles south of Orlando. While Pineapples are not extensively cultivated here, the industry is of sufficient importance to attract the notice of commercial carriers. The fruit has to be carried in small sailboats and transferred to cars at convenient points. While the land is usually low, it is at some places rolling, and usually covered with Pine-woods. The Pineapples are grown largely, however, on the drained land. The ideal land for Pineapples is not met in this section. This is more than compensated for in the fact that frosts rarely occur, and even the most severe freezes have not been sufficient to destroy the oranges or pineapples in this section. A frost is exceptional in this part of the country. Tomatoes are grown here for the winter markets. When the railroad shall have reached this section it will doubtless become one of the important centres for raising pineapples.

The keys are coraline islands skirting the southern coast of Florida. They range in size from a few square rods to many acres, and from sterile to fertile. Here are ideal conditions for the cultivation of Pineapples. The climate is largely affected by the trade winds and Gulf stream, and the year is divided into wet and dry seasons. On many of the islands frosts are almost unknown. The formation permits free drainage. The industry began on these islands, but it is not carried on so extensively nor so intensively as on the mainland.

East Coast is the general term given to the section along the Atlantic coast from the north end of the Indian River to the lower end of Biscayne Bay. The Pineapple section of this country begins near Melbourne, or a little north, and stretches about 200 miles south. On the west shore of the Indian River, or, more properly speaking, on the coast of the mainland, the land is made up largely of sand dunes, and for some distance back from the immediate shore the country has the character of old sand dunes overgrown with vegetation. The soil is generally rather coarse sand, with usually a slight amount of vegetable matter, it often running as low as three per cent., and Pineapples have been planted on land containing even less vegetable matter. This high, dry, sterile sand is considered the ideal soil for Pineapples by the growers of the east coast, and can be obtained in unbroken blocks of hundreds of acres. The sand dunes sometimes rise to the dignity of hills, but all have a gentle undulating character. It should be understood that the portions planted to Pineapples are not the newly formed sand dunes, nor always those on the immediate coast. At several places, as in Jensen, the Pineapple-fields run down to the edge of the water, there being no barren sand dunes in this section. The land some miles back in the country has not been used for Pineapple-growing, though much of it is suitable. The section immediately north of Melbourne is visited by slight frosts about once in three or four years, and freezes sometimes occur, but if the winds happen to be from the north-east, as they usually are during frosts in the interior, there is no great danger to the islands or along the immediate coast of the Indian River. The warmth given off by the adjacent waters is usually sufficient protection, and this whole section is more exempt from freezes than any other portion of the state in the same latitude, consequently Pineapple-growing without protection is carried on much farther north along the east coast than in any other part of Florida. Though the freezes of December, 1894, and February, 1895, were severely felt, the damage was comparatively light, as was shown by the amount of fruit shipped from this section during the summer of 1895.

SOIL.

The ideal soil for Pineapple-growing, as stated before, is high, dry sand, with but a very small percentage of vegetable matter; not that the latter is disadvantageous, but there are other conditions governing the introduction of vegetable matter which are at times detrimental to the growth of this plant. There is no doubt that low sandy land containing much vegetable matter, when well drained and made perfectly dry, is a favorable soil for this crop. It is not uncommon to select sterile land and supply the vegetable matter as a fertilizer, usually in the form of cotton-seed meal. Drainage is of first importance and may be natural or artificial, and irrigation is needed. Flat land must be drained during the rainy season and irrigated during the dry, to obtain the best results. The field is prepared with much more care than is usually given for a vegetable crop. All débris is removed. Slight depressions are filled in and sharp elevations cut down, so as to make the land either quite level or gently undulating.

CULTIVATION.

After the field has been thoroughly cleared it is laid off in checks. The usual distances are from one and one-half feet to two and one-half feet. Roads are provided for travel and to cart the gathered fruit, and these vary from a few feet to ten or fifteen rods apart. The breaking of the leaves is injurious to the crop, and most of the work has to be done by hand. During its early growth a hoe of the ordinary sort may be used, but later it is necessary to use a shuffle hoe, to cut the weeds under the leaves. The root-system of this plant is weak and the plants cannot stand alone, but require the support of their neighbors by bracing themselves with their leaves. Various kinds of fertilizers have been used, with varying degrees of success. Stable manure is desirable where it can be obtained at a reasonable price. The industry is too new to give definite information, and it is only certain that some kind of fertilizer should be used.

VARIETIES.

The Red Spanish variety is probably most widely grown and one of the earliest introduced. While still quite popular it is being rapidly crowded out by finer varieties. It is grown largely on the keys. It is a small fruit of good flavor. Smooth Cayenne has one desirable feature which serves at the same time as a means for recognizing it—that is, the edges of its leaves are quite free from serrations.

The fruit grows large, of fine texture and good quality. Enville City is another strongly marked variety of the better Pines. In place of the central strong leaves usually produced at the apex of the fruit many small crown slips grow. Besides these varieties there are others that produce large fruit of good quality.

PROPAGATION.

There are two general ways of propagating Pineapples. The most common and desirable method is from buds which form at the ground-level, or just below, and come up in the form of young plants. These produce a crop about a year earlier than the slips. They are usually called suckers. Slips is the ntame applied to smaller plants that are produced immedia ely below the fruit. Sometimes they are allowed to remain on the plants until they are large enough to be set in the field. A fruiting plant will often produce twenty or more, and the slips are the most prolific way of reproduction, though not the most desirable, since they take a year longer to come to maturity. The crown of the Pineapple when taken out and planted will produce sets. This has been resorted to with high-priced varieties, but is not usually practiced. It is quite generally believed that Pineapples do not produce seed. This, however, is quite as erroneous as the belief that pineapples grow on Pine-trees. Some varieties produce seed quite freely and others very sparingly. The seeds may be planted and germinated in the ordinary way.

SHEDS.

It has long been an established fact that pineapples grown indoors in England are of finer texture and superior flavor to those grown in the open air of the tropics. The structures used in Florida are novel. Posts are set at convenient distances from ten to twenty feet apart in checks. Suitable rafters are then placed from post to post uniting them in rows. Crosswise of these rows is laid one-by-four-inch sheeting, allowing a distance between the slats just equal to the width of a slat, so that one-half of the space is covered. The illustration on this page shows a shed constructed near Palm Beach. The posts have been tied together both ways; the picture represents a view across the slats, making the cover appear continuous. The posts are long enough to raise the shed from six to nine feet above the ground, giving room for cultivation. Lumber can be obtained from the mills at $6 or $8 a thousand feet; the cost of sheds varies from $400 to $600 per acre. At first they were constructed to prevent injury from slight frosts, but as they were allowed to remain during the summer it was soon discovered that the fruit was considerably larger than that grown in the open field. The size of the fruit is not the only advantage, but the texture is more tender and

Fig. 38.—The Cultivation of Pineapples under Sheds in Florida.—See page 274.

the flavor much better. Later it was discovered that these Pines come into bearing during various portions of the year, thus giving marketable fruit in November and until the close of the pineapple season. The pioneers in this work were regarded as visionary, and it doubtless took a great deal of courage to invest about $4,000 for building an eight-acre shed, but now this plan has been extended to such places as Palm Beach, where Cocoanuts flourish and the danger of frosts is very slight. When it is remembered that a single fruit of good size and quality sells for $1.00 in the pinery at Christmas it is readily seen that this protection is profitable, even in the extreme south, as few fields, even on the keys, are never visited by frosts. There are no pineapples grown under glass for commercial purposes in Florida.

EXTENT OF THE INDUSTRY.

Professor H. J. Webber, Eustis, Florida, special agent for the Division of Vegetable Pathology and Physiology, United States Department of Agriculture, gave the following figures in his paper before the Florida Horticultural Society: number of acres in Pineapples in 1894, in the Avon Park region, 100; Orlando region, 30; Myers, 3; on the keys, 300; the East Coast, 2,056—making a total of 2,389 acres. The figures were obtained by diligent inquiry in visits to many fields of the regions. The freight department of Florida railroads shipped, according to the same paper, 56,209 crates, or about 3,000,000 fruits in the same year. This does not include the local consumption, those sent out of the state by express, nor those carried from the keys in boats and not transferred to railroads.

Agricultural College, Lake City, Fla. *P. H. Rolfs.*

Plant Notes.

Iris hexagona, La Mance.—Another season's growth of this Arkansas variety confirms the first impression as to its being a handsome form. Among the many Irises it would be difficult to name the most beautiful and pleasing, but this has claims to be numbered among the choicest of a generally handsome family. There are others of more delicate and quaint hues, but the color of this is as nearly blue as is found in flowers. The flowers are wide-spreading, with flat segments, and three or four are borne on short pedicels on one side of a leafy prostrate stem. It is perfectly hardy and has long, thick, creeping rhizomes. The white-flowered form of Iris hexagona, discovered in Florida by Mr. Mead, does not prove to be hardy here.

Hydrangea quercifolia.—Of the plants now in bloom in shrubberies this bush is conspicuous by its large cymes of showy flowers. The heads are pyramidal in outline. The sterile flowers are quite numerous and entirely hide the fertile ones on the inside. On first opening the sterile flowers are rich creamy white, changing eventually to a pinkish tinge. The plant in a young state has a rather straggling, or one-sided, appearance, but when it grows older it becomes a compact and neat bush. The leaves are five-lobed and quite large. The petioles and young wood are densely covered with a rusty colored downy substance. Perhaps the reason it is not more abundant in collections is the difficulty of propagation. It is exceedingly slow in rooting from cuttings at any season of the year. Hydrangea quercifolia is found growing in partly shaded places in Florida, Georgia and westward, and is quite hardy in most of the northern states.

Philadelphus Lemoinei.—A figure of this hybrid plant was published in 1889 in the second volume of this journal, when it had not flowered in the United States and nothing was known of its value here as a garden plant. Philadelphus Lemoinei had been raised by Monsieur Lemoine of Nancy, who, in 1884, had crossed the Old World Philadelphus coronarius with Philadelphus microphyllus, a native of the Rocky Mountains of Colorado. Philadelphus Lemoinei has now been grown in the Arnold Arboretum for six years and has proved itself perfectly hardy and a most desirable and beautiful garden plant. The stems, which are about two feet high, were clothed last week with fragrant white flowers which are intermediate in size and in the time of opening between those of the two parents. For a small garden where the common bush Syringas are too large Philadelphus Lemoinei will supply in miniature their white flowers and delightful perfume. It is a temptation which too frequently is not resisted to overpraise new plants, but in this case it does not seem easy to say too much of the merits of a shrub which Monsieur Lemoine has good right to consider one of his most important contributions to the flora of gardens.

Yellow Roses.—Hardy yellow Roses have produced exceptionally large crops of fine flowers this year in many northern gardens, and the beauty of these plants has never been more striking. There are two yellow-flowered Roses, Rosa sulphurea, often called Rosa hemisphærica, and Rosa Eglanteria; the former has been known in European gardens in a double form since the sixteenth century, but it was not until 1830 that the single form was discovered. It is a native of Asia Minor, Armenia and Persia, and in 1859 the single form was described by the Swiss botanist, Boissier, under the name of Rapinni. So far as we know, neither the single nor the double-flowered form of this Rose is in our gardens, and it is believed to be more tender than Rosa Eglanteria, which is also often called Rosa lutea, and is a native of western Asia. This is the single-flowered yellow Rose of old gardens, and as a garden plant is one of the most charming shrubs in cultivation. A form of this plant, with the petals dark copper-colored or red on the upper surface and yellow on the lower, is one of the most distinct of Roses. The origin of this form, which is commonly called the Austrian Copper Brier, is uncertain. It has been in gardens for more than a century, and has a rather weak constitution, and is hard to keep for many years at a time except in specially favorable situations. The Persian yellow Rose is the double-flowered form of Rosa Eglanteria, and a common plant in many old gardens. It is not always a free bloomer, and the flowers do not open satisfactorily in this climate, but this year the plants have been generally covered with large well-formed blooms. Harrison's yellow Rose, which is the common yellow Rose of American gardens, is supposed to be a hybrid between Rosa Eglanteria and the Scotch Rose, Rosa spinosissima, but nothing is known of its history, and we shall be glad of any information our readers may be able to give us concerning it. It is a hardy free-blooming plant, but the flowers are less beautiful and fragrant than those of the double Persian yellow Rose. The flowers, like those of all the varieties of Rosa Eglanteria, have the perfume of the Sweetbrier.

New Hybrid Roses.—A season or two since Mr. W. A. Manda crossed Rosa Wichuraiana with various other species and varieties, Eglantine, a number of the most attractive Teas, American Beauty and General Jacqueminot. The hybrids have lately been shown at South Orange, planted out on bare sandy banks, in positions where R. Wichuraiana is especially valuable and attractive. In character of foliage and habit of growth they resemble the prostrate rambling parent, but the crossing has produced a most remarkable series of free-flowering plants with handsome fragrant flowers. One attractive hybrid has clusters of pink single flowers similar to those of the Sweetbrier. Another, pure pink double flowers, the buds of which resemble in miniature the Bridesmaid. There are also several forms with double white flowers. One of these with a delicate pink hue is peculiar and distinct, the numerous small, rounded petals being reflexed and perfectly imbricated, an arrangement not usual among Roses. Mr. Manda has also a number of other forms, mostly pink or rose in color, and varying in shape and number of petals, which he proposes naming and offering next year. These hybrids must meet with great favor with planters, as they add a brilliancy or warmth of color to a valuable Rose.

Cultural Department.

Seasonable Work.

THE various insect pests with which we have to battle now indoors make quite a catalogue, among the most common being white, black and brown scale, and various intermediate forms of these insects, red spiders, thrips (both black and yellow) and mealy bugs of several varieties and degrees of fecundity. For the latter a hot-water bath may be used successfully in some cases, at least with plants having sufficiently tough foliage to endure such treatment, but careful experiments should be made before submitting valuable plants to this ordeal. A method I have used for this operation was that of placing a metal vessel—for example, a large galvanized iron pail—on an oil-stove, the pail to be filled with clean water heated to a temperature of 130 degrees, Fahrenheit, and by proper regulation of the oil flame this temperature may be maintained without a variation of more than two degrees. A thermometer should be suspended in the bath in order that any material variation of temperature may be at once corrected.

Immersion in water at this temperature (130 degrees) for a period varying from thirty to ninety seconds resulted in no injury to the foliage of the plants thus treated, and in some instances every mealy bug on the plant was killed, while in others an occasional insect escaped, possibly by being protected from contact with the water by a surrounding air-bubble. The plants thus treated were Palms, and included Areca lutescens, Latania Borbonica, Kentia Forsteriana and Cocos Weddelliana.

At a slightly higher temperature, ranging from 135 to 138 degrees, Arecas and Latanias did not seem to suffer in the least, but Cocos and Kentia were both injured, the latter most severely. The plants subjected to the second experiment were apparently in the same condition as to growth and health as the specimens used for the first, and the injury was not at once apparent, but became quite noticeable five or six days afterward. Some forms of scale were also killed by a water-bath at 135 degrees, but others appeared to be but little affected thereby. Of course, these simple experiments do not prove hot water to be a panacea for the insect-ills of plants, but they may encourage further research for information on this line.

The so-called fumigation of plants by means of a mixture of dilute sulphuric acid and cyanide of potassium has been reported in some horticultural journals within the past three months, but is a process that should only be attempted with extreme precaution, The reaction from this admixture (if I am not mistaken) is a strong solution of hydrocyanic acid, one of the most deadly poisons even by inhalation. Some idea of its strength may be had from the fact that the medicinal solution of this acid as prepared by chemists only contains two per cent. of the pure drug, while the solution procured by the process above noted probably contains from twelve to fifteen per cent. of the pure acid, and is, therefore, extremely dangerous.

Holmesburg, Pa. *W. H. Taplin.*

Perennial Peas.

EVERLASTING or Perennial Peas are capital garden subjects where low-growing or trailing vines are desired. They are mostly vigorous, making a rapid and strong growth each season and flower freely. The best known of these are varieties of Lathyrus latifolius, of which the pink and red forms are most common. The white variety, however, is the better; the flowers have perfect purity of color, but are not fragrant. These forms are grown from seed, which germinate too freely in the borders. The white variety does not always come true from seed, and is better propagated by the side-shoots, which may be torn off early in the year when the plants start, or it may be propagated from the old vines used as cuttings in the fall. There are named kinds with bright-colored flowers which have been selected and propagated, but L. rotundifolius (or Drummondii) is the best of the colored kinds. This is also a vigorous species with vines of about the same length as those of L. latifolius. The flowers, which have smaller standards than these, are of a pleasing garnet hue. It does not seed very freely. L. tuberosus is a small-leaved, fine-stemmed plant, desirable as a trailer, and has dark red flowers. The tuberous roots are perfectly hardy and the plants are inclined to wander in the border.

The California Perennial Peas, Lathyrus splendens, L. bactiflorus, L. violacea and L. sulphureus, do not make much progress here, and as yet have not flowered. They are of thin, rather delicate growth, but with slight protection may prove hardy, as those left outside survived last winter.

Elizabeth, N. J. *J. N. G.*

Strawberry Culture.

A NUMBER of varieties of Strawberries are regarded in different sections as standard kinds, and it is puzzling to find some growers condemning sorts that others consider indispensable. The reason is that Strawberries are extremely local in their behavior, and soil and exposure have a great deal to do with the result; and the returns from a given variety vary as much as the localities in which the fruit is grown. In this climate a soil that has a clay bottom is not regarded suitable for Strawberry culture, as the plants suffer in spring from upheaving after the frosts. Our subsoil is gravel, and though it makes watering and mulching necessary, we get the best possible results each year. We plant a new bed in the summer months as soon as the runners have strong roots, and then destroy the bed that has borne for two summers. It does not pay to attempt to get a third crop from the plants; they lose vigor, many die out entirely, and the soil seems to be exhausted by the end of the second season. It is economy to plant at least a few every year so as to keep up the fertility of the varieties and to make sure of a good supply of the fruit.

We have tried many kinds, mainly to find out those best suited to our purpose, and each grower should experiment for himself if the varieties he has do not give satisfaction. We have sifted down to Michel's Early for the earliest, Parker Earle for second, and Gandy for late varieties, and these are sufficient for our needs. The Marshall has not been a success in this section; it winter-killed severely and made a poor crop this season. We shall not plant more of it this year.

As soon as all the fruit is gathered we clean the beds of all weeds and mulch. The soil in each alternate row is then lightly forked over and three-inch pots of soil plunged about the plants to receive the runners as soon as these are large enough. The runners will soon root, and when a wet season starts in, as usually happens in early August, we have the new ground ready and set out the young plants two feet apart in the rows and three feet between the rows. All runners should be kept off the young plants during the fall growing time. When setting out the plants care should be taken to set the cut ends of the runners of every two rows pointing toward each other. The next year all the runners will be thrown into one alley, and each alternate alley will be left free for use in watering the pots in dry weather. This plan involves little trouble at planting time and will save a great deal of time and labor the next year. A slight mulching in fall is necessary in this latitude, and we leave the mulch on late in spring to prevent the plants starting too early and having the early bloom killed by late spring frosts. It must, however, be taken off later, so that the surface may be well stirred up and a little fertilizer strewed round the plants. The lawn clippings should then be used as they are raked up; no better material can be had as a mulch to keep the earth cool and moist and to keep the fruit clean and free from grit. We get a good crop the first summer after planting, and this is when the largest fruit is gathered. In the bed that is bearing the second season the greatest quantity is produced. This ends the usefulness of the beds, which are afterward made over for fall Cabbages. The ground that will be planted later with young plants is now occupied with early vegetables, such as Spinach, Lettuce, Beans, Beets and others that will be past when the ground is needed for the Strawberry plants. In this way no time is lost nor ground wasted, as happens when spring planting is practiced. The plants are great feeders, and it is wise to provide liberally for them when starting a new bed. It should be dug or plowed deep to induce the roots to go down. Deep cultivation is one of the best possible remedies for dry periods, and each year seems to bring just such experiences with it.

South Lancaster, Mass. *E. O. Orpet.*

Browallias.—These are among the most satisfactory of the annual flowering plants. They seem to revel in our hot, dry, summer weather. No soil appears to be too poor for them to make a creditable showing in, although they grow and flower more freely in that which has been enriched. Browallia Roezli is probably the most showy of the genus, and, next to B. speciosa major, has the largest flowers; these are lavender-colored on the outer part of the corolla and whitish near the centre, with a yellow eye, a most pleasing combination of color. This species has the further merit of producing a large number of flowers at one time. B. elata purpurea has much darker flowers than the type; they are quite a dark shade of purple with a white eye. In fading, however, the flowers assume a

whitish shade which detracts from their beauty. The same may be said of B. speciosa major; when the flowers of this beautiful variety are two or three days old they have a washed-out appearance. B. demissa was the first of the number to be introduced into cultivation. It is a rank grower; the flowers are small and of a pale purple color. B. Czerwiakowski is an upright-growing kind, with large leaves and pure white flowers. Although Browallias succeed well enough sown in the open border, they come into flower late in the season. If sown indoors and planted out about the first of May they are continually in bloom until frost, and it is well worth the extra trouble to treat them in this way.

Botanic Garden, Washington, D. C. *G. W. O.*

Coronilla Capadocica.—This genus contains but few species that are regarded as hardy. Coronilla varia is, perhaps, the best known, and is a desirable species, and C. Capadocica, which is quite distinct, has proved to be a good garden plant and perfectly hardy. It is of prostrate habit, sending up in summer numerous spikes of the brightest golden-yellow flowers, which remind one of the blossoms of Lotus corniculatus, except that they are much larger. C. Capadocica is a native of Asia Minor, and is another of the many fine garden plants for which we are indebted to the energy and perseverance of Mr. Whittall. Plants grown here produce seeds freely and afford a ready means of propagation. As with all leguminous plants, it is best to start the seeds where the plants are to remain permanently, as it sometimes takes years for the plants to recover from the check caused by removal.

South Lancaster, Mass. *E. O. O.*

Correspondence.

Notes from Natick, Massachusetts.

To the Editor of Garden and Forest:

Sir,—When Mr. H. S. Hunnewell started his new place in Natick, close to the Wellesley line, some five years ago, he scarcely realized the magnitude of the task he had undertaken. He built his house on a knoll in the woods on one of the high points of the locality. When he went there it was almost as nature had left it. The ground was broken by numerous hollows and ledges, so that much blasting had to be done in order to bring about a gracefully undulating surface. The place is the reverse of formal, and it would be a difficult matter to make it so. The advantages of such a splendid location have been fully made use of, and with progressive spirit and foresight characteristic of the owner, and under the able guidance of his father, Mr. H. H. Hunnewell, it will ultimately became one of the finest estates in New England, where a thoroughly natural style of gardening may be seen. The grounds are approached by a beautiful drive nearly half a mile in length, following to some extent a natural valley. The gradients are steady, but not steep. Where any cutting has been done it has been carefully graded, so as to be scarcely noticeable, and planted with shrubs and trailing plants, but not in a way to suggest anything artificial. The drier ledges are gradually being covered with suitable plants, including Yuccas, Sedums, Sempervivums and some alpine plants.

At the entrance to the drive there is a notable piece of old-fashioned stone wall built by the owner's grandfather, and it is in good condition to-day. It is valued as a remnant of old times, and the approaches are made to conform with it. The place is entered through a cutting, and there being little to suggest our approach the effect is most pleasing when it first opens.

The natural soil is scanty, but of good consistency, and rests on a clayey subsoil. The grading has been tedious and costly, as the ground is full of stones, interspersed with bowlders of the large size. Some weighing as much as fifty tons have been moved and judiciously placed. Here and there through the trees a glimpse of these imposing and interesting features of the landscape is had. When fortified to the depth of a foot or more the soil is of the best possible composition for trees and shrubs of all kinds. Belting the wooded background there is already a fine collection of ornamental foliage and flowering shrubs. There has been a splendid show of bloom this spring. All the shrubs are growing rapidly, and already give a finished appearance to the place. For the quickest and best effects new places should be begun in this way. The planting of coniferous trees, shrubs and evergreens in general can be better done later. With these results come slowly, and much thought is required to properly formulate a plan with a view to effects later on. Many landscapes are utterly ruined by improper planting. A desire for immediate effects is in nearly every case the cause. The artist is not always to be blamed. Generally, when he hands over the place to the owner, his responsibility ceases. But it should not. As the trees and shrubs grow they need frequent thinning out. Practical advice should be from time to time sought with regard to what is best to remove and what best to leave.

The area available is beyond all needs. The north side of the residence is scarcely touched. Here, no doubt, there will be formed an extensive collection of evergreens, ornamental as well as flowering. For alpine plants there are unlimited possibilities. Thus far the flowering and ornamental foliaged deciduous shrubs have been arranged in groups composed, in the main, of allies. Considered with regard to effect, nothing is lost, while for comparison and selection one has an excellent opportunity to judge of their various merits. The Viburnums are together. They afford wonderful variety. V. opulus sterilis, the Snowball-tree, or Guelder Rose, is their most familiar representative. It is a remarkably handsome shrub where it succeeds well. Weighed down with pendulous heads of the large-rayed sterile flowers, it is a striking object. Scarcely less beautiful is the type when loaded down in the autumn with bunches of large red berries. This is known as the Cranberry-tree. Equally handsome is V. plicatum, the Snowball-tree of Japan. The flower-heads resemble those of the Guelder Rose, but are erect, and the habit of the plant is more rigidly spreading. V. plicatum tomentosum is known as the fertile form, and is also a beautiful shrub. Conspicuous in this group is V. latanoides, with large, oblong, prominently veined woolly leaves. V. cassinoides has handsome shining olive-green leaves and umbels of Elder-like, sweet-scented flowers. V. acerifolium is distinct, with its Maple-like leaves. V. Sieboldii is a strong-growing kind with ribbed leaves and open umbels of white flowers. V. prunifolium has handsome Plum-like foliage.

Roses, although scattered through the place, are all represented in one group, and are remarkably healthy and free from insect pests. The rose-bug does not appear to thrive here. With us, in older gardens, it is often a question whether we shall disfigure our plants by the use of a multitude of insecticides, only to be partially successful, or give up their cultivation.

The Rose is a difficult genus when we come to examine the species and varieties; though often similar they may be distinct. Rosa alpina and R. blanda appear almost identical to a casual observer. To distinguish them when in leaf it is necessary to examine the bark. R. blanda is unarmed, except on the young shoots, while in R. alpina the prickles are scattered all over the bark, almost to the ground. R. Carolina is locally native. R. lucida has broad, shining foliage and deep pink flowers. The Burnet, or Scotch Rose, R. spinosissima is among the most beautiful. The stems are so densely covered with reddish spines as to give the whole plant a bronzed hue. Its large white flowers are produced in the greatest profusion, so that bushes of it, wherever seen, are conspicuous objects. R. spinosissima grandiflora is a well-named variety, somewhat larger in all respects. R. foliolosa, a charming little Rose from Texas, has blush or sometimes pure white flowers. The blooms are large for the size of the plants and very fragrant. It comes into bloom later, as does R. nitida, with striking bronzed foliage and reddish pink flowers. R. multiflora will soon be a cloud of bloom, to be succeeded later by a profusion of bronzy hips. The Prairie Rose, in soft colors, is opening its large buds and will continue in bloom until late; while that giant among Briers, R. rugosa, the earliest and the latest, continues to bloom abundantly.

A few other flowering shrubs are worthy of special note. There is now a gorgeous display of Kalmias. These do better here than anywhere I have seen them. There are many hundreds, in all sorts of positions. They appear to do best on northerly exposures. Ligustrum Ibota is a hardy and most graceful Japanese Privet, worthy of general cultivation.

Herbaceous plants have not been neglected, and for the most part are kept by themselves, as they should be. They do well enough associated with shrubs for a while, in new shrubberies, and make pretty effects. As the shrubs increase in size and extend their root-area, it becomes harder to keep herbaceous plants in good health. The roots of the shrubs drain the borders of all moisture. Dictamnus Fraxinella is a strikingly handsome member of the Rue family and is here represented by a large group. Pæonies in another place, Yellow Foxgloves, Digitalis ambigua, and the common kind, D. purpurea, are always beautiful. Lilium Hansoni is showing up well. There are Day Lilies of several kinds and none handsomer than the old Hemerocallis flava. H. Mittendorf-

fiana, with orange-yellow flowers, adds variety, and later, all through the summer months, the handsome H. Thunbergii will continue to bloom. A fine group of Lupinus pollyphyllus shows what a handsome border plant it is. Trollius, Poppies, Larkspurs and Columbines add to an already fine collection, with hosts of others to follow in succession for the remainder of the season.

Wellesley, Mass. *T. D. Hatfield.*

Notes from West Virginia.

To the Editor of GARDEN AND FOREST:

Sir,—A vigorous and beautiful shrub at Rose Brake is a Fontanesia which was bought for F. phyllyræoides. This shrub or small tree is described as weeping in habit, but our specimen is a young tree, tall and straight, with handsome narrow leaves and no tendency of the limbs to grow downward. It is about six years old, twelve feet in height, and has small yellowish flowers in clusters. It is possible that this Fontanesia is of erect habit while young, and that the branches droop when the tree or shrub has attained maturity. It seems to be a rare plant, as I can find no account of it in the botanies I possess.

This year we have our Cannas in a large round bed about a tall clump of Arundo donax, which grows with us to the height of twelve feet. Groups of Yuccas stand near. Three varieties of these beautiful plants are now in bloom. Yucca flaccida was the first to open its flowers, but the more common Y. filamentosa attains the largest size here. Sometimes the flower-stalks measure seven feet in length. The blossoms look a little dull by daylight in contrast with the pure white Madonna Lilies, but seen on a moonlight night they have a beautiful pearly lustre which is like that of no other flower, and this gives them an indescribable grace and charm. Y. recurva, Y. angustifolia, Y. filamentosa and its variety flaccida are perfectly hardy here. So also is Y. stenophylla, which has not yet bloomed for us. Y. superba lives, but does not grow very fast and does not flower. It is protected by a covering of dead leaves in winter.

Cedrella Sinensis, planted in this semi-tropical shrubbery I am describing, in company with Aralias, Paulownias and a beautiful Japanese Acacia, is now a tall, symmetrical young tree, more refined and elegant in appearance than the Ailanthus, which it resembles. It is twenty feet in height, eight years old and has not bloomed. Neither has the Japanese Acacia, which is labeled Acacia Nemu, ever given us a flower, although it is older than the Cedrella. It is described as bearing rosy flowers, but I suppose our climate is too cold for them, although the tree stands our winters without protection.

Sassafras bushes are so ornamental that we think them worthy of a place among the handsomest exotic shrubs. We have two or three of them in a group near our Japanese Maples, and there is a charming rivalry between them. Sometimes I think the Sassafras bears away the palm for variety and beauty of color in the new growth. Then the odd shapes of the leaves, the erect habit of growth, the tender coloring of the young shoots and the refreshing aroma of the whole plant make it one of the most desirable of our native trees. It should be planted for its rich coloring in the fall, as well as for its vernal beauty.

Shepherdstown, W. Va. *Danske Dandridge.*

Recent Publications.

The first annual report of the Chief Fire Warden of Minnesota, appointed under "an act to provide for the preservation of the forests of the state and for the prevention and suppression of forest and prairie fires," approved April 18th, 1895, has been published. Under the act as quoted above the supervisors of towns, mayors of cities and presidents of village councils are constituted fire wardens. The chief fire warden may appoint fire wardens, and in case the fire force of any locality is inadequate to prevent or suppress forest fires he may appoint temporarily additional fire wardens. It is the duty of the fire wardens to post placards containing an abstract of the penalties proposed under the act, to prevent, if possible, the setting of forest and prairie fires, and, as far as practicable, to control fires. For this purpose they may call to their assistance any able-bodied male person over eighteen years of age. They must coöperate with the fire wardens of adjoining districts, and, in the absence of these, may direct the work of control and extinguishment of forest fires outside their own districts. They are obliged to arrest without warrant every one found violating any provision of the act and to make complaints against such persons before a magistrate.

Under the act companies operating railroads within the state of Minnesota are obliged to use efficient spark-arresters on all locomotives, to keep clear of all combustible materials their right of way to the width of fifty feet on each side of the centre of the main track, to prevent their employés from leaving fire or live coals or hot ashes in the immediate vicinity of woodlands or lands liable to be overrun by fires. Engineers, conductors or trainmen who may discover that fences and other materials along the right of way, or that woodland adjacent to the railroad are burning or in danger from fire must report the same promptly at the next telegraph station that they may pass. In dry seasons railroad companies must give particular instructions to their employés for the prevention and prompt extinguishment of fires, and must cause warning placards to be posted at their stations in the neighborhood of forest and prairie grass lands. They must concentrate such help as shall be available to effectively extinguish fires occurring along the lines of their roads.

The State Auditor is made Forest Commissioner, with authority to appoint a deputy to be known as Chief Fire Warden, who is entrusted with the enforcement of the provisions of this act. The Chief Fire Warden has general charge of the fire warden force of the state and may appoint temporarily fire wardens for any territory. He may incur an expense not exceeding $5,000 in any one year for special assistance to prevent or suppress fires during periods of peculiar danger. It is made his duty to investigate the extent of the forests of the state, with the amounts and varieties of the timber contained in them, the damages done to the forest by forest fires, the causes of such fires, the methods used to promote the regrowth of timber, and any other matters of interest relating to the forests. This information, with his suggestions, shall be included in a report which he is to make annually to the Forest Commissioner. The salary of the Chief Fire Warden is $1,200, and each fire warden receives for his actual services $2.00 a day. Men called on in emergencies to assist in extinguishing fires are to receive $1.50 a day. Two-thirds of this shall be paid by the company where the service is performed and one-third by the state. No county is allowed to expend more than $500 of public money in any one year under the act.

The first annual report of the Chief Fire Warden treats of the organization of his service, a list of the fire wardens of the different counties, general directions for the extinguishment of fires, a report on the forest and prairie fires of 1895, in which it appears that in an aggregate area representing about six million acres of prairie country there were during the year, according to the report of fire wardens, one hundred and five fires, which burnt over about 73,000 acres, while only about 8,000 acres of forest were burnt over, with an estimated damage of only $1,325. A considerable space is devoted to the remarks of the fire wardens on forest fires, and this part of the report might, perhaps, have been reduced in bulk by more careful editing. An account is given of the Minnesota forests, with the amounts and varieties of the wood and timber growing in them by counties. The methods and importance of the logging industry are touched upon, with replies from a number of lumbermen relative to existing methods of lumbering. The regrowth of White Pine and the utility of forests are discussed. The statement of expenses shows that only $2,020 were expended during the year in this serious effort at forest preservation. The report, which contains one hundred and eighty-eight pages and is accompanied by a forest map of Minnesota, will be found of special interest to every one interested in checking the destruction of property through forest fires.

Notes.

A large tanning establishment has recently been erected at Astor, Florida, for the purpose of utilizing the tannic acid contained in the roots of the Saw Palmetto, Serenoa serrulata, for

tanning leather. This tannery, which is furnished with eleven large tanks, is said to have capacity enough to tan all the hides produced in Florida.

During June 520,000 bunches of bananas were sold at wholesale in this city, 16,000 bunches more than were imported in the same month a year ago.

The United States Consul at Havre, France, recently sent home some samples of new textile fabrics which were exhibited at the State Department in Washington. They were woven from the fibres of peat, which, as they proved, can be bleached to whiteness and will then take any dye. These fabrics are said to be especially advantageous from the fact that they have antiseptic qualities which will prevent them from harboring disease germs.

Professor R. L. Watts, the horticulturist of the Tennessee Agricultural Experiment Station, has written a short treatise on Onion-culture, which has been published as a farmers' bulletin by the United States Department of Agriculture. It is one of those useful little monographs which the department is issuing from time to time, and which are very successful in selecting the important phases of a subject and treating them thoroughly, and yet concisely and in a practical straightforward way, which cannot but be helpful to any careful reader.

We have spoken in another column of the value of the hybrid Philadelphus Lemoinei as a flowering shrub in this country, and we have just received a note from an English correspondent who states that masses of this shrub were among the most attractive features of Kew Gardens in the middle of June. The plants were set in large groups, and although they were no more than two feet high they were covered with their white and fragrant flowers, while the light-colored foliage makes them attractive all the summer through.

At a wood-pulp mill at Elsenthal, in Austria, a trial was recently made to show how quickly living trees could be converted into newspapers. At 7.35 o'clock in the morning three trees were felled. By 9.34 the wood had been stripped of its bark, cut into suitable pieces for the mill, converted into pulp and pressed into paper. Then it was passed from the factory to a neighboring printing-press, and the first printed and folded copy of the journal was ready for perusal at ten o'clock, just 145 minutes after the axe had been laid to the standing trees.

Bulletin No. 1 of the Geological and Natural History Survey of the Chicago Academy of Sciences is devoted to an account of the Lichen flora of Chicago and vicinity, by William Wirt Calkins. It is the initial number of a series of publications in which the Chicago Academy of Sciences proposes to discuss the botany, zoölogy and geology in the neighborhood of Chicago. The area which it is proposed to include in the survey is about fifty miles square, leaving, after deducting the water-covered portions, nearly 1,800 square miles, and comprises all of Cook and Du Page counties, the nine northern townships of Will County and a portion of Lake County, Indiana.

The famous Great Tun long shown to tourists in Heidelberg Castle, in Germany, and hitherto the largest in the world, is greatly exceeded in size by one recently constructed on the St. George Vineyard, at Fresno, in California. This cask is thirty feet in height and about twenty-six in diameter and holds 79,000 gallons of wine, while the Heidelberg cask holds about 42,000. It is built of redwood obtained from the forests of Humboldt County. The lumber required would have sufficed to build a large house, and two car-loads of steel hoops were needed to bind the immense staves together. As these had to be absolutely free from flaws of every kind, not one piece of timber in ten was found perfect enough for use.

Cork has been tried as a paving material in Vienna and London with much success. It is granulated, mixed with mineral asphalt and other cohesive materials, and compressed into blocks of suitable size, which are embedded in tar and rest upon a concrete foundation six inches in thickness. The advantages claimed for cork pavements are cleanliness, noiselessness, elasticity, durability, moderate cost and freedom from the slipperiness which, in wet weather, makes asphalt pavements undesirable. Moreover, unlike wooden pavements, they are non-absorbent, and therefore inodorous. Samples taken from a London street near the Great Eastern Railway station, where traffic is very heavy, had been reduced in thickness by less than one-eighth of an inch after being in use almost two years.

Professor Lucius Marcus Underwood, at present Professor of Botany in the Mechanical and Agricultural College of Alabama, has been appointed to the position at the head of the botanical faculty of Columbia College in this city, recently resigned by Professor Britton when he was offered the post of director of the city's new Botanical Garden, and now made Professor Emeritus. Professor Underwood has particularly devoted himself to the study of cryptogamic plants, and is an authority on the Ferns and their allies and on several groups of fungi. Previous to his appointment to the chair he now fills he had been Professor of Botany at Syracuse University and at De Pauw University. He represented the United States at the international botanical congress held in Genoa in 1889, has been vice-president of the botanical section of the American Association for the Advancement of Science, and has published numerous botanical papers. He will begin his work at Columbia in the autumn.

A large consignment of fruits from Victoria was exhibited not long ago in London. There were apples of many sorts, all in good condition, together with pumpkins, custard-melons and pineapples. Some of the English papers seem to be especially exasperated at the fact that the English markets should be filled with apples when the home-grown fruit is said to be the best in the world, and it is recommended in a leading paper that the Chambers of Agriculture should send out half a dozen men to study the system of fruit-growing pursued in Canada, the United States and Australia, so as to instruct English fruit growers against such injurious competition. But no amount of instruction would help English farmers to grow custard-melons and pineapples at home, while early winter and late autumn apples are not to be found in June except in the southern hemisphere. No doubt, English fruit growers can improve on their methods, but they never can grow enough fruit for home consumption, and it ought to be a matter of self-congratulation in England that her commercial relations and facilities are such that she is able to get the best of fruits from her colonies and elsewhere all the year round.

It is well known that fermentation of different kinds is due to the action of certain yeast-plants, and that different plants give different results. In butter-making, for instance, it is now the practice to cultivate in marketable quantities the varieties of ferments which will give the best quality and flavor to butter. It has been proved, too, that the bouquet of different wines depends largely on the ferment which develops in the juices of the grape, so that there are many distinct wine-yeasts cultivated and sold, the different varieties giving special bouquets to the wines in which they are used. More recent experiments show that the best of the wine-yeasts can be used in the fermentation of cider and the juice of berries, so that it is said to be possible to make a wine from cider which possesses the bouquet of Rudesheimer. At the recent horticultural exhibition at Berlin one of the most interesting exhibits in the scientific section was a collection of these clean yeast-cultures in gelatine, as well as of the injurious yeasts and microphotographs of both. Since the keeping quality and flavor of the wine both depend so largely on the quality of the yeast which brings about the fermentation, these microscopic plants have assumed great importance in agricultural economy.

An interesting bulletin has just been issued by the Rhode Island Experiment Station on Apple Culture, which has received a new impetus in that state since the spray pump has been used as a means of warfare against pests, so that neglected orchards in that region are now being pruned and fertilized until they have become productive and valuable. Apple-trees have come to be regarded as cultivated plants which must be regularly supplied with food, and since the roots extend wide as well as deep it is found necessary to apply fertilizers over the entire space where they spread. Apple-trees need much moisture, and when this is lacking the fruit falls unripe and the winter varieties decay prematurely. Mulching is essential, and if the tops of the trees are allowed to shade the ground and prevent the free movement of air currents over the roots during drought the value of the mulch is greatly increased. The form of the tops in different varieties naturally differs, but all need a large leaf area exposed to the light if good crops are expected. The Greening, for example, forms a more spreading top than the Baldwin or Roxbury Russet, but the limbs of the last two droop to the ground in mature trees. Strong light promotes the formation of the fruit-buds, and the interlacing of the branches of adjacent trees is unfavorable to their formation, a fact which is graphically illustrated by pictures of twigs grown in the sunlight and in the shade. Directions for combating the various fungi and insects are full and complete, and it is suggested that poultry can be used to good advantage against the apple maggot. Altogether this is a valuable paper.